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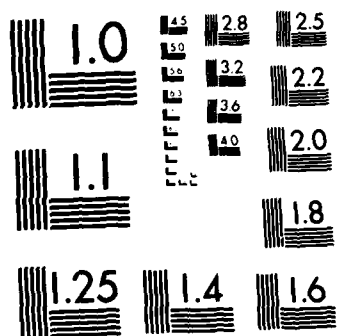
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JOINT DOD VERSUS NAVY
SPECIFIC LEAD GENERATION ADVERTISING:
Comparison of Conversion Rates
to Quality Enlistments and Marginal Costs

Report ONR-389-1

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September, 1984

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1.0 INTRODUCTION

1.1 Background and Scope

For several years there has been at the national level two major concurrent efforts to generate leads for the enlisted portion of the Armed Services:

- i) Each of the branches of the Armed Services has its own national advertising campaigns, consisting of TV/radio, direct mail, magazines, etc. This is referred to as service-specific advertising. For example, the Navy spent in FY82 nearly \$7.5M (only the placement costs are included in this figure). This does not include the roughly 28% in overhead, or copy generation expense nor the Navy's local advertising program of \$1.325M in placement costs nor the Navy's Minority program. The Army's service specific advertising budget runs at a level about tenfold the level of the Navy's.
- ii) Joint DOD campaign, referred to as JADOR expenditures, which is administered by the Office of the Assistant Secretary of Defense and is designed to generate leads for all of the Services. The comparable level of expenditures for the Joint campaign in FY82 was about \$7.3M or about the same level as the Navy.

The key question being asked is, "What is the optimum mix of Joint versus Service-specific advertising?," especially as it impacts on the supply-limited group of recruits, i.e., the male, Upper Mental, High School Degree graduate recruits? To help

answer this question, DOD currently has underway an Advertising Mix field experiment (see [1]) in which Service specific and Joint advertising expenditures are being systematically varied to discern the relative impacts of each and any synergisms that may be operating. The conclusions from this experiment, begun in October, 83 will not be available until late next year.

In contrast, the effort reported here has made use of so called "natural" experiments occurring over the course of 2 years (FY81, FY82) across the Navy's 41 districts. These refer to fluctuations, both systematic and unsystematic, occurring in the levels of expenditures over the districts and years. The conclusions are relevant only for Navy enlistments since data on other Services' advertising levels, recruiters, contracts, etc. was not available. Section 1.3 addresses the central issues being addressed, the key one being the impact on Navy quality enlistments of tradeoffs between Navy specific advertising and Joint DOD advertising.

1.2 Types of Data Utilized

This analysis relied on monthly, district-level data from FY81 and FY82, the prime focus being the production of the truly supply limited group of recruits, namely those who are of the male, HSDG, Upper Mental category. In addition to the routine data on contracts, demographics, number of recruiters, military pay, etc., we utilized some unique data available for the first time namely:

- i) Cost data, by month by district and by media type (magazines, TV/radio, direct mail, etc.) for Navy specific advertising;
- ii) Cost data, by month by district and by media type, for Joint DOD advertising;
- iii) Number of Navy national leads, (NOIC leads) by month by district, from a Navy specific source* of advertising;
- iv) Number of Navy national leads (NOIC leads), by month by district, from a JADOR source of advertising;
- v) The numbers of the above leads, by month and by district, of each type that are male.
- vi) The numbers of the above leads, by month and by district, of each type that are male and will be or are High School Graduates.**

* If a lead comes from both types of advertising, it is assigned to the mode to which it first responded.

** The actual information is whether or not they have completed at least eleven years of High School. An earlier study (see [3]) by Morey utilized total NOIC leads from each of the two modes of advertising, but without the important quality breaks.

1.3 Key Questions Being Addressed

- i) Are there spill over or substitution effects between the two types of advertising?
- ii) Are there differences in the "quality" of the national leads that come from the sources, e.g., is there a higher probability that a Navy specific national lead will be a male or HSDG qualified, compared to a JADOR sourced Navy national lead?
- iii) What are the relative conversion rates of the quality leads of each type, i.e., do Navy sourced quality leads convert to enlistments at a higher rate than is the case for the JADOR sourced quality Navy national leads?
- iv) If the Navy unique advertising budget is reduced by X dollars, what additional funds need to be allotted to the JADOR budget so that the number of quality enlistments to the Navy will not be reduced?

2.0 SUMMARIES OF DATA

2.1 Comparisons of Key Recruiting Factors, Resources and Outcomes for FY80, 81, and 82

Before presenting the regression results, Tables 1 and 2 are provided to provide some insight into the relative performances by year.

TABLE 1

COMPARISON OF KEY RECRUITING FACTORS AFFECTING NAVY FOR

FY80, 81, 82

	<u>FY80</u>	<u>FY81</u>	<u>FY82</u>
1) Weighted average local unemployment ratio over all districts	6.35%	6.95%	8.8%
2) Average Military/Civilian Pay Rate Over Nation	1.1249	1.2026	1.2917
3) Total Number of Male, HSDG, 17-21 Year Olds Scoring in Mental Categories I-IIIU.	4,984,858	4,983,395	4,723,489
4) Total of Male, HSDG 17-21 Year Olds Scoring in Mental Categories I-III	6,541,423	6,543,777	6,277,507
5) Total Number of Recruiter Man-Years (Includes Administrative Personnel)	3,752.1	3,793.4	3,691.4
1) Number of Production Recruiter Man-Years	3,183.0 (84.8%)	3,243.5 (85.5%)	3,099.1 (84.0%)
6) Navy National Advertising Enlisted Campaign, Excluding Minority (Placement Cost Only)	\$3.856M	\$5.859M (\$5.3M in FY80 Dollars)	\$7.438M (\$6.3M in FY80 Dollars)
1) TV/Radio	\$3.388M (87.9%)	\$5.491M (93.7%)	\$5.434M (73.1%)
11) Magazine	\$.038M (1.0%)	\$.110M (1.9%)	\$1.148M (15.4%)
111) Direct Mail	\$.430M (11.2%)	\$.258M (4.4%)	\$.856M (11.5%)

7) Navy Local Advertising (Placement Cost)	\$1.207M	\$1.404M (\$1.27M in FY80 Dollars)	\$1.325M (\$1.11M in FY80 Dollars)
8) Total Joint DOD Campaign, Excluding Minority (Placement Costs)	\$8.143M	\$8.205M (\$7.42M in FY80 Dollars)	\$7.299M (\$6.13M in FY80 Dollars)
i) TV/Radio	\$4.291M (52.7%)	\$5.186M (63.2%)	\$5.174M (70.9%)
ii) Magazine	\$2.526M (31.0%)	\$1.142M (13.9%)	\$1.910M (26.2%)
iii) Direct Mail	\$.967M (11.9%)	\$.294M (3.6%)	\$.215M (2.9%)
iv) Newspaper/Supplements	\$.359M (4.4%)	\$1.583M (19.3%)	\$ 0 (0%)

TABLE 2

COMPARISON OF KEY OUTCOMES FOR NAVY FOR FY80, 81, 82

	<u>FY80</u>	<u>FY81</u>	<u>FY82</u>
1) Number of Male, HSDG Contracts in Mental Categories I-IIIU	38,515	34,195	43,859
2) Number of Male, HSDG Contracts in Mental Categories I-III	48,891	45,548	58,711
3) Number of Male, Qualified and Interested Local Leads	55,645	61,477	90,624 ^a
4) Total Number of Navy National Leads from Navy Specific Advertising	89,435	145,605	144,695 ^b
1) Males	70,641 (79.0%)	124,487 (85.5%)	125,361 (86.6%)
11) Males Known to Have at Least 11 Years of High School	59,834 (66.9%)	77,639 (53.3%)	85,417 (59.0%)
5) Total Number of Navy National Leads from a JADOR Source	70,563	84,698	69,847 ^b
1) Males	48,988 (69.4%)	69,214 (81.7%)	56,878 (81.4%)
11) Males Known to Have at Least 11 Years	37,676* (53.4%)	22,659* (26.8%)	9,653* (13.8%)
6) Average Number of Male, HSDG, I-IIIU Contracts per Recruiter Man-Year (Ratio of (1) from Table 2 to (5) of Table 1	10.6	9.01	11.88

7) Average Placement Cost per Male, Qualified and Interested Local Lead (Ratio of (7) from Table 1 to (3) of Table 2)	\$21.69	\$22.84	\$14.62
8) Average Cost per NOIC <u>Male</u> Lead from a Navy Specific Source (Rates of (5) from Table 1 to 31 of Table 2)	\$54.58	\$47.07	\$51.40
9) Average Cost per NOIC <u>Male</u> Lead from a JADOR Source (Ratio of (8) from Table 1 to 31 of Table 2)	\$166.22	\$118.55	\$128.33

a

By way of comparison there were 51,690 contacted local leads in FY83 which yielded 5,462 contracts for a 10.57% conversion rate.

b

In contrast to FY82 where there was a total of 214,542 Navy NOIC leads (regardless of source), there were 171,110 such leads in FY83 which yielded 6,085 contracts for a conversion rate of 3.56%. Hence only about 13.5% of the total contract objective in FY83 is coming from either local or NOIC leads.

*The JADOR lead form does not capture the education information to the extent that the Navy specific lead form does; hence there are many JADOR leads where that information is simply missing.

On inspection of Tables 1 and 2, some general observations are in order:

- i) The average unemployment rate in FY82 is 26% higher than that for FY81, accounting partly for the increase in quality contracts in 82.
- ii) The military pay/civilian pay ratio is 7.5% higher in FY82 than in FY81, also accounting for part of the increase in quality contracts in 82.
- iii) In FY82, there were about 144.7K Navy sourced leads versus 69.8K Navy leads from a JADOR source.
- iv) Looking at FY82 e.g., the percent of leads which are male is about the same for the two types of advertising, e.g., 86.6% for Navy specific leads versus 81.4% for the JADOR sourced Navy leads.
- v) The JADOR lead form did not capture the education information to the extent that the Navy specific lead form did with the consequence that many JADOR leads do not include education information. Given this caveat, 59% of the Navy sourced national leads were known to be male and have at least 11 years of High School; the corresponding figure for the JADOR leads is but 13.8%. For FY80, the percentages were 66.9% for Navy unique versus 53.4% for JADOR.
- vi) For FY82, there were 90.6K local leads who were male, qualified and "interested."* The number in FY82 was

* They wanted more information.

51,690, yielding about 5,462 contracts for a conversion rate for male local leads of 10.57%.

To put this into perspective, the conversion rate for all NOIC leads (regardless of source) was 3.56% in FY83, i.e., 6,085 contracts resulted from 171,110 NOIC leads. Hence only about 11.5K contracts in FY83 came from a formal lead. In other words only 13.5% of all contracts came from a formal lead. The possible conclusion is that while Navy specific and Joint advertising expenditures do have a pervasive impact on enlistments, the impact derives from generation of awareness and stimulating the potential recruit to visit a recruiter station directly, without the recruit ever becoming a formal national or local lead.

3.0 RESULTS OF ECONOMETRIC ANALYSES

3.1 Comparison of Elasticities for Quality Navy Enlistments, of Male Navy Sourced Leads Versus Male JADOR Sourced Leads

Table 3 is presented to show the results of econometric analysis using the district-monthly data for FY81 and FY82. The total number of cells is 41 districts x 12 months x 2 years = 984 cells. The percent of variation explained (i.e., the R^2) was .79.

TABLE 3

KEY LONG TERM ELASTICITIES RELATED TO PRODUCTION OF
MALE, UPPER MENTAL, HSDG CONTRACTS

(Based on FY81 and FY82)

<u>Factor</u>	<u>Elasticity</u>	<u>T-Ratio</u>
1) Recruiters (Production on Board)	.6165	15.78 (significant at .01% level of significance)
2) Navy Male National Leads from a Navy Unique Source of Advertising* (2 Months Lagged)	.0678	3.279 (significant at .1% level of significance)
3) Navy Male National Leads from a JADOR Source of Advertising* (2 Months Lagged)	.0181	1.09 (significant at 28% level of significance)
4) Local General Unemployment Rate	.3201	10.51 (significant at the .01% level of significance)
5) Number of Upper Mental, Male, 17-21 Year Olds in District	.311	9.14 (significant at the .01% level of significance)
6) Ratio of First Year Military Pay to Civilian Pay	.523	5.55 (significant at the .01% level of significance)
7) Percent of Male, 17-21 Year Olds Included in a SMSA for District in Question (Urban-Rural Factor)	.042	1.94 (significant at the 5.24% level of significance)
8) Number of Male, Local Leads Deemed Qualified and Interested	insig.	N.A.

*An NOIC lead is determined to be from a Navy unique ad or a JADOR ad, if it comes from both, based on which response was received first.

The key conclusion here is that the conversion rate for male Navy unique NOIC leads to male, Upper Mental, HSDG contracts is about 2.37% versus a conversion rate of 1.39% for male JADOR sourced leads. This represents a 70% higher conversion rate for Navy sourced male leads over JADOR sourced male leads. One possible reason is that a JADOR sourced NOIC lead is quite possibly a lead to the Air Force, Army, or Marine Corps also, whereas a Navy specific lead may not have as much competition, from the other Services. The other key results were that: 1) in FY82 each additional recruiter could be expected to add about 8.72 more male Upper Mental, HSDG contracts per year, compared to the average of 11.88 in FY82; 11) local leads seem to have very little impact on the production of male, Upper Mental, HSDG contracts, the prime impact of local leads being on the production of lower mental category or non-HSDG contracts.

COMMENTS ON TABLE 3

LONG TERM ELASTICITIES FOR MALE, UPPER MENTAL, HSDG CONTRACTS

(Based on Monthly-District Data for FY81 and FY82)

Regression: This is an OLS run, pooling the results for FY81 and FY82 across the different districts. (The FY81-FY82 pooling was justified based on the Wallace test.*) Monthly and yearly dummies were included.

* (See [5] and [2])

Interpretations and Implications

- 1) Note that male NOIC leads of two different types (i.e., from a Navy specific source of advertising and from a JADOR source of advertising) were used as the explanatory variables. It should be mentioned that a similar run was made using male, NOIC leads known to have at least eleven years of High School (presumably high school seniors or those who had already graduated). The regression results are almost identical, the elasticities for male, High School senior/graduate Navy specific NOIC leads being .0585, and the elasticity for male, High School senior/graduate JADOR sourced NOIC leads being .0150. Even though these latter types of leads are the more relevant ones (in terms of the production of Male, Upper Mental, HSDG contracts), the JADOR sourced NOIC lead form did not emphasize the educational information to the same extent as did the Navy unique NOIC lead form. Hence, for example, in FY82, while 59% of the Navy specific leads were known to have at least eleven years of High School, only 13.8% of the JADOR sourced leads were known to be such. Hence to deal with this anomaly in the fairest way possible, the numbers of male NOIC leads (from either of the two sources) were used as the key independent variables.
- 2) If one applies the elasticities from Table 3, one arrives at the following estimated marginal conversion rates for FY82;
 - 1) For fiscal year 82, each additional Upper Mental, male, HSDG contract (over the level attained of 43,859) would have

required either 71.68 more male, JADOR sourced, NOIC leads, or 42.17 more male, Navy sourced NOIC leads. That is, the marginal conversion rates from a male, JADOR sourced NOIC lead to a male, Upper Mental, HSDG contract would be about $1/71.68$ or 1.39% versus $1/42.17$ or 2.37% for a male, Navy specific sourced NOIC lead. This represents a 70% higher conversion rate for male, Navy sourced NOIC leads than from male JADOR sourced NOIC leads, no doubt in part due to the fact that the JADOR sourced lead may well also be a lead for the Army, Air Force and Marine Corps. It is also possible that the recruiters give preference to one type of lead over another in their follow-up activities.

To discern if these estimated conversion rates for UMHSDG, male contracts are credible we note in FY83, 171,110 NOIC leads of all types yielded but 6,085 contracts of all types for an overall average conversion rate of 3.56%. Hence it is reasonable that the marginal conversion rates, especially to a UMHDG male contract, might be somewhat smaller.

- 3) Note that the number of male local leads, even though qualified and interested, do not appear to impact significantly on the production of male, Upper Mental, HSDG contracts. This agrees with the intuition of Naval Recruiting administrators who feel that local leads, while very helpful in terms of total contract production, do not contribute much to the production of Upper Mental, HSDG recruits. This may be due to the fact that the classified

ads are read more by non-HSDG individuals. At the same time, it should be mentioned in FY83 that a conversion rate from local leads to all type of contracts of 10.57% was observed.

- 4) The elasticity for recruiters is .6165, implying for FY82 that at the margin, each additional recruiter could be expected to add annually 8.72 male, Upper Mental, HSDG contracts. This is to be compared to an annual average of 11.88, the decrease being due to the diminishing return nature of the recruiting resources, due to the shrinking pool of eligibles.
- 5) The unemployment elasticity is .32, signifying that the 26% increase in the average local unemployment rate (from FY81 to FY82) could be expected by itself to bring about an increase of 2,834 Upper Mental, male HSDG contracts. Note the actual increase was 9,664. Moreover, there was in terms of real dollars a 20% increase in Navy advertising expenditures, and a 7.5% increase in pay ratios; in addition substantial management changes related to the productivity of recruiters* were instituted, all of the above helping to explain the increased productivity for FY82 compared to FY81.

* These changes were related to a more equitable and productive allocation of the Navy's Delayed Entry Pool through the PUMP program. See [4] for more details.

3.2 Comparison of the Production of Male Navy Sourced Leads Versus Male, JADOR Sourced Leads

Table 4 presents the results of two econometric analysis for FY82, one where the dependent variable is the number of male, Navy, NOIC leads from a Navy specific source of advertising, the other being the number of male, Navy NOIC leads from a JADOR source of advertising.

TABLE 4

LONG TERM ELASTICITIES OF VARIOUS RESOURCES AND DEMOGRAPHICS
ON THE PRODUCTION OF TWO TYPES OF MALE NOIC LEADS:

<u>Factor</u>	<u>Male, NOIC Leads (Navy Unique)</u>	<u>Male, NOIC Leads (JADOR Source)</u>	<u>Comments</u>
1) Ratio of Military Pay to Civilian Pay	1.419	1.588	Level of military pay to civilian pay has very high impact on production of male NOIC leads of either type, as expected.
2) Local Unemployment Rate	.394	.425	Local unemployment large factor on generation of NOIC male leads, as expected.
3) Percent of Male, 17-21 Year Old, HSDG's in a SMSA in District (Urban-Rural Factor)	.243	.274	A higher urban factor enhances generation of NOIC male leads, as expected.
4) Navy Minority Advertising	insig.	insig.	No discernible impact of Navy minority advertising on generation of male leads.

5) Navy TV/Radio Expenditures	.311	.294	Navy TV/radio expenditures not only contribute to generation of Navy specific leads, but also synergistically help generate JADOR sourced NOIC leads.
6) Navy Magazine Expenditures	.051	-.078	Navy magazines have a small but significant impact on generation of male, NOIC leads from a Navy-specific source but reduce (through a substitution effect) the number of JADOR-sourced male NOIC leads.
7) Navy Direct Mail Expenditures	.14	.031	Navy direct mail appears to have a large impact on generation of male, NOIC leads from a Navy source and appears to somewhat enhance the response of a JADOR sourced male NOIC leads also.
8) JADOR TV/Radio Expenditures	insig.	insig.	The model using FY82 data could not detect any impact of JADOR TV/radio expenditures on the generation of male, NOIC leads, either from a JADOR-source or from a Navy source. In comparison, the JADOR TV/radio elasticity on JADOR male NOIC leads for FY81 was .054 and .22 for FY80. Its effect may well be included in JADOR magazines and JADOR leads.

9) JADOR Magazine Expenditures	insig.	.254	JADOR magazine has a large impact on the generation of male, NOIC leads from a JADOR source but provides no synergism for generation of male, NOIC leads from a Navy unique source.
10) JADOR Direct Mail Expenditures	insig.	.288	Same as is true for JADOR magazine expenditures.

The key conclusions from Table 4 are:

- i) Navy specific national advertising has the following impacts on male, NOIC leads:
 - a. High impact of Navy TV/radio on generation of male, Navy specific sourced NOIC leads, and synergistically on JADOR sourced, male NOIC leads.
 - b. Navy direct mail has high impact on Navy sourced, male, NOIC leads and small synergistic effect on JADOR sourced male, NOIC leads.
 - c. Navy magazines has moderate impact on Navy sourced, male NOIC leads but at expense of JADOR sourced, male leads, i.e., a substitution effect operates whereby more Navy magazine advertising increases the number of Navy sourced leads but reduces the JADOR sourced NOIC leads.
 - d. Navy minority advertising appears insignificant in generation of male NOIC leads.
- ii) The JADOR advertising has large impacts on generation of JADOR sourced male NOIC leads but there appears to be no spillover effect for the generation of Navy unique sourced NOIC leads.

3.3 Comparison of Marginal Costs for Additional Male, Upper Mental, HSDG Contracts in FY82 From Incrementing Navy Specific Advertising Versus Joint Advertising

Table 5 shows the steps in estimating (from the earlier elasticity and cost information) the marginal cost to have achieved in FY82, one additional male, Upper Mental, HSDG contract. In the analysis on the left hand column of Table 5, we assume the additional money would be spent exclusively on Navy specific advertising in the same proportions as was actually used in FY82; in the second column, we assume all of the additional monies would be spent on JADOR advertising, again in the same proportions as was spent in FY82.

The key result is that if the monies went into Navy specific advertising, the marginal advertisement placement costs would be \$4,404 for one additional Upper Mental, Male, HSDG contract; the corresponding number for JADOR advertising is \$16,935.

It also needs to be stated that the 284.5% increase in cost (for more Navy, male HSDG contracts from a JADOR source relative to a unique source) does not admittedly take into account the benefit that accrues to the other Services from JADOR advertising. However, if one removes the X dollars from the Navy unique advertising budget, and replaces it by Y dollars in JADOR advertising, one must be careful to insure that Y/X be at least as large as 3.845 ($\$16,935/\$4,404$), or else the number of high quality, male contracts obtained by the Navy might well decline.

TABLE 5

COMPARISON OF COST OF ADDITIONAL NAVY MALE, UPPER MENTAL, HSDG CONTRACT
IN FY82 FROM INCREMENTING NAVY-UNIQUE ADVERTISING IN FY82 OR INCREMENTING
JADOR ADVERTISING IN FY82

(Assumes Same Mix of Media for Navy-Unique Advertising and Same Mix of Media
for JADOR Advertising)

Logic if Additional Monies put into Navy Advertising (Using Same Media Mix as in FY82)	Additional Monies put into JADOR Advertising (Using Same Media Mix as in FY82)
A Navy advertising in FY82 - \$7.438M	A' JADOR Advertising in FY82 - \$7.299M
B 1% increase in Navy advertising in FY82 - \$74.38K	B' 1% increase in JADOR advertising in FY82 - \$72.99K
C Elasticity of Navy advertising on male, Navy sourced leads - .502 (made up of .311 for Navy TV/radio, .051 for Navy magazines, and .14 for Navy direct mail)	C' Elasticity of JADOR advertising on male, JADOR sourced leads - .542 (made up of .254 for JADOR magazines and .288 for JADOR mail)
D Number of male, navy sourced leads obtained in FY82 - 125,361 leads	D' Number of male, JADOR sourced leads obtained in FY82 - 56,878 leads
E Estimated number of additional male Navy sourced leads to be obtained from more expenditures in B - (.00502 x 125,361) = 629.31 leads	E' Estimated number of additional male JADOR sourced leads to be obtained from more expenditures in B' - (.00542 x 56,878) = 309.13 leads
F Number of additional male, navy sourced leads needed for an additional male, upper mental, HSDG contract (from elasticity of .0678 for male, Navy sourced leads on male, upper mental HSDG contracts, a conversion rate of 2.37% is estimated) - 42.17 leads	NOT APPLICABLE SINCE JADOR ADVERTISING DOES NOT APPEAR TO ENHANCE GENERA-
G Additional number of male, upper mental HSDG contracts from the 629.31 additional male, Navy sourced leads from E - 14.92 contracts (629.31/42.17)	

H Net elasticity of Navy advertising on male, JADOR sourced leads (made up of .294 for Navy TV/radio, -.078 for Navy magazines and .031 for Navy mail) - .247

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NAVY SOURCED

NOIC LEADS

I Number of male, JADOR sourced leads obtained in FY82 - 56,878 leads

J Estimated number of additional male, JADOR sourced leads to be obtained from expenditures in B ($.00294 \times 56,878$) - 141.03 leads

K Number of additional male, JADOR sourced leads needed for each additional male, upper mental, HSDG contract (from elasticity of .0181 for male, JADOR sourced leads on male, upper mental HSDG contracts, a conversion rate of 1.40% is estimated) - 71.68 leads

K' Same as K

L Additional number of male, upper mental, HSDG contracts from the 141.03 additional male, JADOR sourced leads from K - 1.97 contracts (i.e., $141.03/71.68$)

L' Additional number of male, upper mental, HSDG contracts from the 309.13 additional male, JADOR sourced leads - 4.31 contracts (or $309.13/71.68$)

M Total number of additional male, upper mental, HSDG contracts from expenditures in B of \$74.38K - 16.89 contracts (sum of G and L)

M' Total number of additional male, upper mental, HSDG contracts from expenditures in B' of \$72.99K - 4.31 contracts

N Marginal cost per additional Navy, male, upper mental, HSDG contract from increase in Navy advertising (ratio of B to M) - \$4,404 (i.e., $\$74.38K/16.89$)

N' Marginal cost per additional Navy* male, HSDG contract from increase in JADOR advertising (\$16,935 (i.e., $\$72.99K/4.31$)

*It needs to be stated that the 284.5% increase in cost (for more Navy, male HSDG contracts from a JADOR source relative to a Navy unique source) does not admittedly take into account the benefit that accrues to the other Services from JADOR advertising. However, if one removes \$X from the Navy unique advertising budget, and replaces it by Y dollars in JADOR advertising, one must be careful to insure that Y/X must be at least as large as 3.845 (\$16,935/\$4,404) else the numbers of high quality male contracts obtained by the Navy may well decline.

REFERENCES

1. Carroll, V. DOD Advertising Mix Field Experiment
Wharton Applied Research Center, Progress Briefing,
February, 84.
2. Morey, R. C., "ESTIMATING DIFFERENCES IN AREA-LEVEL IMPACTS
OF VARIOUS RECRUITING RESOURCES: Can Different
Recruiting Areas and Years be Pooled?" Report
ONR-200-10, Performed Under ONR Contract N00014-
80-C-0200, August, 83.
3. Morey, R. C., LEADS AND QUALITY ENLISTMENTS: The Relative
Impact of Enlistments, Joint and Service Specific
Advertising On Production of Upper, Mental, HSDG, Male,
Navy Recruits, Report No. ONR-200-9, Prepared Under ONR
Contract N00014-80-C-0200, March, 83.
4. Morey, R. C., "MANAGEMENT OF THE ARMED SERVICES' DELAYED
ENTRY POOLS: A Comparison of Recruiting Philosophies
and Issues, Report ONR-200-8, Performed for the Office
of the Assistant Secretary of Defense and the Office of
Naval Research, January, 1983.
5. Wallace, T. D., "Weaker Criteria and Tests for Linear
Restrictions in Regression," Econometrics, Vol. 40,
No. 4, July, 1972.

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